

VARIABLE-GAIN AMPLIFIER HAVING ERROR AMPLIFIER
WITH CONSTANT LOOP GAIN

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ABSTRACT OF THE DISCLOSURE

A translinear amplifier is disclosed. A loop amplifier drives the bases of the input and output transistor pairs from the differential collector voltage of the input pair. The loop amplifier contains a third differential pair (a gain pair). The tail current of the gain pair is inversely related to the tail current of the input pair, such that loop amplifier gain remains
10 stable when the transconductance of the input pair changes (due, e.g., to input gain changes). In one embodiment, a linear-in-dB interface is provided that adjusts input pair tail current exponentially (and gain pair tail current exponentially and inversely) to linear voltage changes at a gain input.